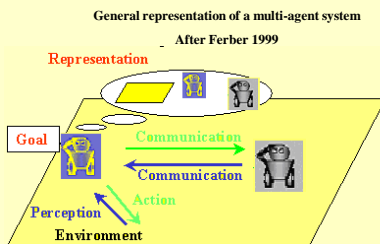


Interdisciplinary Training on Multi-Agent Systems (MAS), Social Sciences and Integrated Natural Resource Management (INRM) in Thailand

Justification

- There is an urgent need to provide young scientists with principles and frameworks for organizing and integrating knowledge from various disciplines and sources to examine increasingly complex renewable resource management problems.
- Adaptive resource management is required to deal with unpredictable situations and the adaptive capacity of managers can be improved through better coordination of their multiple uses of limited common resources.
- Recent advances in distributed artificial intelligence (DAI), especially multi-agent systems (MAS), are providing innovative modeling approaches and tools for dealing with complex systems in an interdisciplinary and participatory way.
- Because they emphasize distribution, interactions, control, and points of view, MAS are adapted to understand the relationships between societies and their environment.
- The MAS approach is therefore particularly adapted to facilitate interdisciplinary training and research among scientists working in ecology and social sciences to promote INRM and facilitate decentralized management of renewable resources.



Objectives

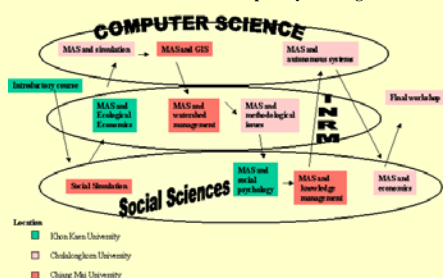
- To transfer European expertise and research results in the field of MAS applied to social sciences, natural resource management, and the environment.
- To improve technology cross-flow and quality of Europe-Asia partnerships in the field of MAS for social sciences and INRM.
- To facilitate the implementation of teaching and research activities in this field in Southeast Asia, particularly by documenting local case studies dealing with concrete INRM problems.



Course structure and organization

- A series of 12 short courses and workshops are organized in collaboration with three public universities in Thailand hosting 1-week training sessions in rotation between October 2001 and mid-2004.
- Each time, different course instructors present their disciplinary "point of view" and experience and discuss their own models and applications with trainees. But all these instructors belong to a community of European researchers using MAS for social simulations.

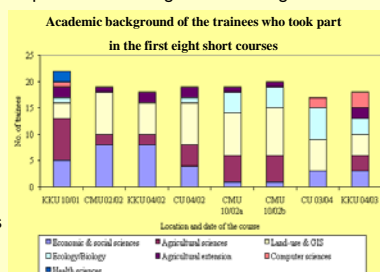
General structure of the interdisciplinary training course



- The Common-pool Resources and Multi-Agent Systems (CORMAS) software is the main simulation platform used throughout the training process (<http://cormas.cirad.fr>).

Participants and diversity of academic background

- Trainees are graduate and post-graduate students, University lecturers-researchers, but also officers from development-oriented government agencies who are interested in applied and interdisciplinary approaches to participatory resource management.
- 16-20 trainees and several observers from 11 countries (mainly Thailand, The Philippines and Vietnam) and more collaborating institutions attend each course.
- The diversity of educational background among trainees responds to a similar diversity for the course instructors.



Course contents

- Apart from attending the series of courses, participants are encouraged to gradually develop their own applications dealing with local INRM problems.

Contents of the training program on multi-agent systems, social sciences, and INRM

Step No	Month / year	Location / Univ	Main theme	Main instructor / Institution	Key concepts Introduced
1	Oct. 2001 (2 weeks)	KKU	Introduction to MAS for INRM	Dr. F. Bousquet IRRI-Cirad, Thailand	Overview of the main concepts
2	Feb. 2002	CMU	MAS & social simulation	Pr. N. Gilbert University of Surrey, UK	Simulation in social sciences, emergence
3	Apr. 2002	KKU	MAS & ecological economics	Dr. M. Janssen Vrije Universiteit, NL	Resilience, models in ecology & economics
4	Apr. 2002	CU	MAS & computer sciences	Pr. A. Drogoul Paris VI University, FR	Agents in computer science, distribution
5	Oct. 2002	CMU	MAS & geographic information systems (GIS)	Dr. S.P. Kam, IRRI, PHIL Dr. C. Le Page, Cirad, FR	Spatial dynamics, Scales
6	Oct. 2002	CMU	MAS & integrated watershed Management	Dr. O. Barreteau Cemagref, Montpellier, FR	Integrated modelling, companion modelling
7	Mar. 2003	CU	MAS & the environment: methodological issues	Pr. Scott Moss Manchester Metro. Un., UK	Validation of models, Abstraction
8	Apr. 2003	KKU	MAS & social psychology	Dr. Wander Jager University of Groningen, NL	Social psychology, Decision-making Processes of agents
9	Oct. 2003	CMU	MAS & knowledge management	Pr. Niels Roling Wageningen University, NL	Tools for participatory decision-making, soft science
10	Early 04	CU	MAS & autonomous systems	Dr. J.P. Muller Cirad, Montpellier, FR	Autonomy, learning in computer Science
11	Early 04	CU	MAS & economics	Dr. Alan Kirman, Greqam Aix-Marseille University, FR	Decentralized Economics
12	Spring 04	CU	Synthesis: the whole picture	Dr. F. Bousquet IRRI-Cirad, Thailand	Review of concepts already Introduced

- Teaching techniques and specific tools are used to stimulate interdisciplinary exchanges and the production of unified views on a given question.

Preliminary sustainable outputs and lessons learnt

- The selected format of this training process is effective for producing cumulative improvements in trainees' knowledge and skills in the field of MAS for INRM.
- Ten applications and MAS models are at various stages of development in five countries; some have been presented in seminars and conferences.
- Trainees introduce the MAS approach in their M.Sc. theses and more senior participants are starting to teach this subject in existing graduate studies programs at several universities.
- Several core participants are taking complementary courses on MAS abroad and beginning doctoral studies in this field to deepen their knowledge of MAS for INRM.
- It remains difficult to establish strong linkages among computer scientists, ecologists and social scientists for them to work as interdisciplinary teams in their common institutions.



Perspectives

- A well-connected regional network of MAS for INRM practitioners is emerging. Its members are linked by a "new way of thinking" about complex problems with the people, a strong bond, common interest, and friendship.
- Its members are already engaged in the joint publication of their first case studies and other activities to disseminate their new knowledge and enhance stakeholders' participation in resource management through collective learning experiences.
- The introduction of the course contents in more university graduate and post-graduate programs is being considered.
- Setting up a specific graduate program in the field of MAS for INRM at a leading regional university is under study.



Contact persons and organizing institutions

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